Armed Forces College of Medicine

AFCM

Diseases of Stomach (Gastritis ulcer)

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INTENDED LEARNING OBJECTIVES (ILO)

By the end of this lecture you will be able to:

- Summarize pathology of acute gastritis & acute gastric ulceration
- Classify chronic gastritis
- Explain pathogenesis & complications of H. pylori associated gastritis
- Compare between pathology of H.pylori associated gastritis & autoimmune gastritis
- Explain pathology and complications of peptic ulcer
- Correlate pathologic features of non neoplastic gastric diseases with clinical picture and complications

Lecture Plan

1. Part 1 (10 mins): Acute gastritis
2. Part 2 (15 mins) :Chronic gastritis
3. Part 3 (20):Peptic Ulcer
4. Lecture Quiz (5 min)

Gastritis

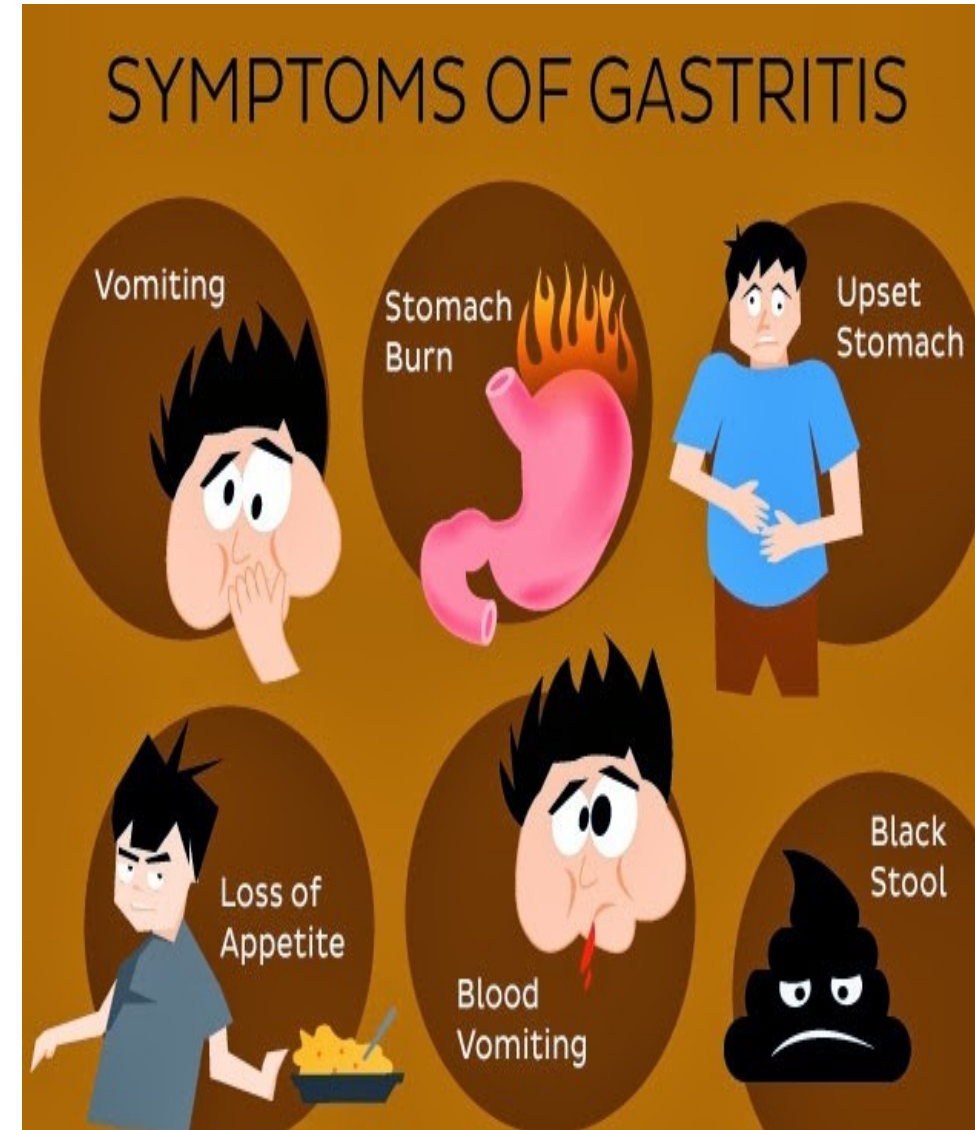
Gastritis:

Inflammation of gastric mucosa.

Classified according to course:

- Acute
- Chronic

Clinical presentation:

- Epigastric pain.
- Dyspepsia.
- Nausea & vomiting.
- Hematemesis or melena.
- Anaemia.

Acute Gastritis

Etiology

- Diet: irritant or spicy food
- Drinking: Alcohol & Cigarette consumption.
- Drugs: **NSAIDs** & cytotoxic drugs.
- Disease: e.g. Uremia, infection (e.g. salmonella).
- Ischemia or shock
- Irradiation injury

Acute Gastritis

Mic:

1- Acute superficial gastritis:

- Edema -hyperemia - Neutrophilis
- Intact mucosa

2- Acute Erosive gastritis:

Severe mucosal damage with focal necrosis & erosion

3-Acute gastric ulceration

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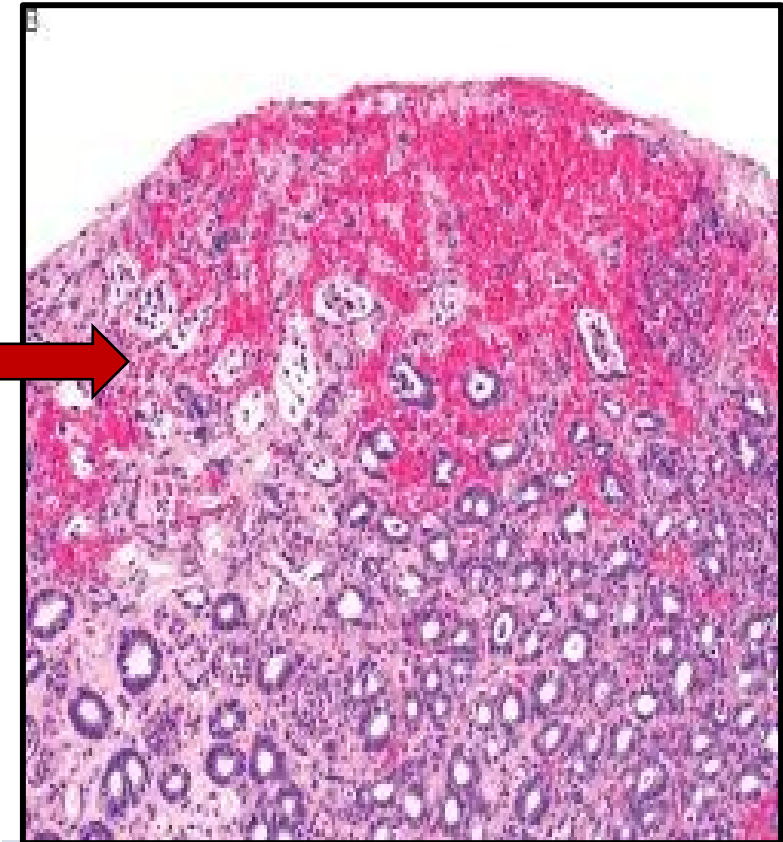
Acute erosive gastritis

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Acute gastric ulceration

Causes :

- NSAIDs
- Stress ulcers
- Curling's ulcer: Associated with severe burns
- Cushing ulcer: Associated with trauma to C.N.S

Gross:

- Rounded < 1cm brown to black
- NO Scarring. No thick blood vessels.

Mic:

- Shallow epithelial ulcers up to deeply penetrating mucosa,
- + Trans-mural inflammation

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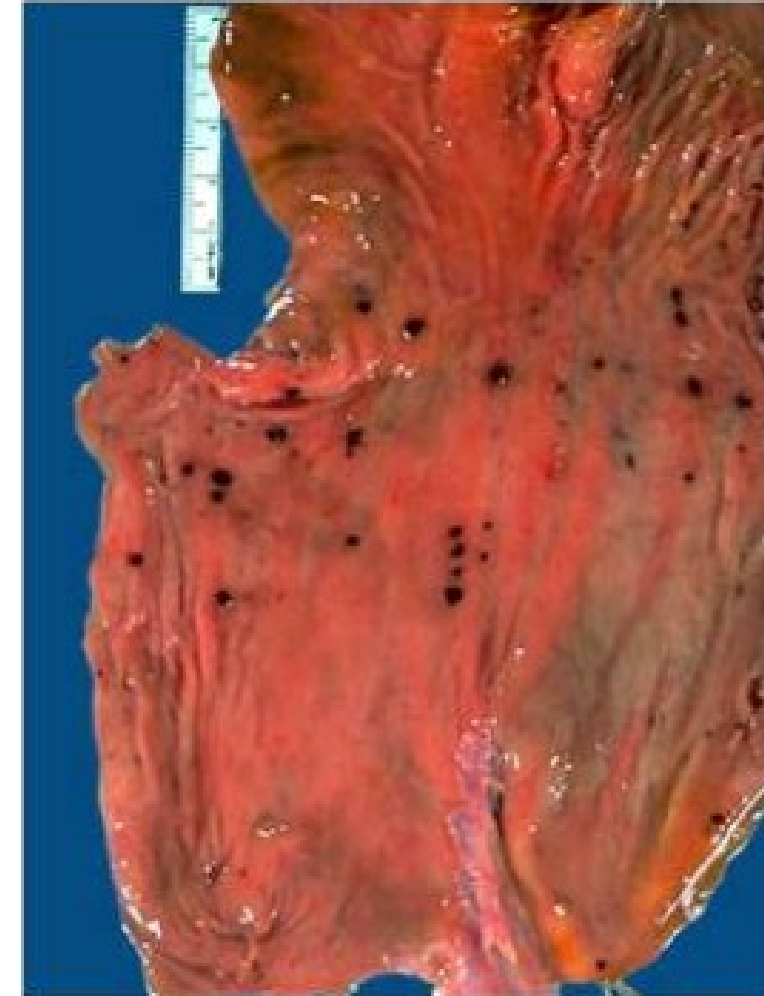
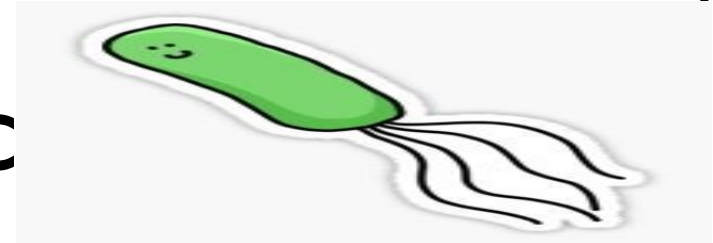

Acute gastric ulceration *(Quiz)*

Enumerate 2 causes of acute gastric ulceration

- NSAIDs
- Stress ulcers
- Curling's ulcer: Associated with severe burns
- Cushing ulcer: Associated with trauma to C.N.S

Chronic Gastritis

lassification according to etiology

1. **Helicobacter(H) pylori Associated C**

Gastritis.

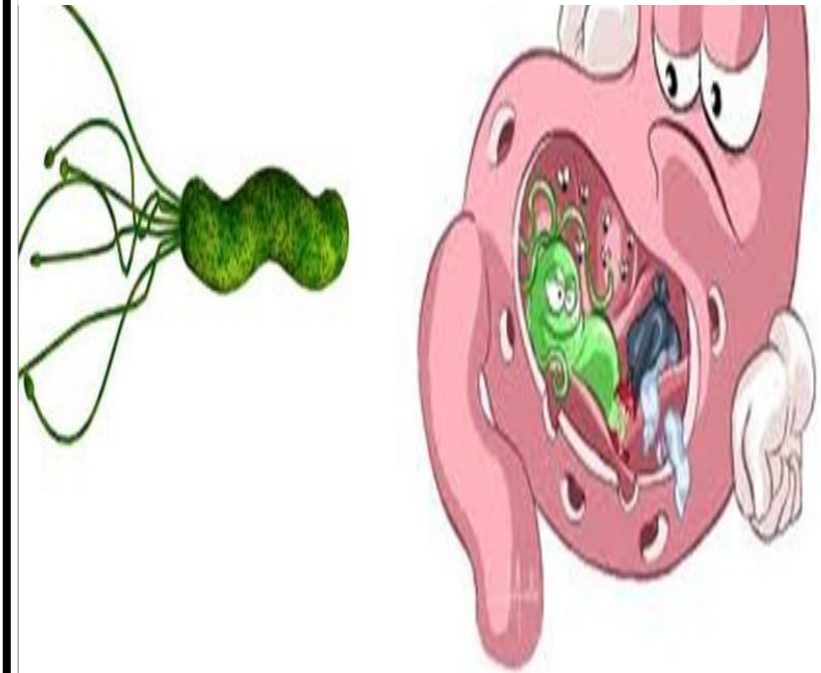
2. **Autoimmune Gastritis**
3. **Reactive gastritis:**

H. pylori Chronic Gastritis

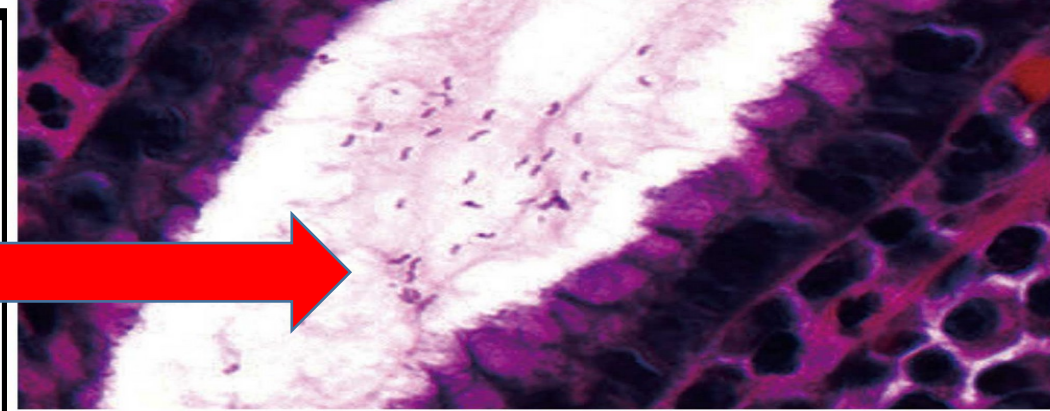
Pathogenesis :

- Curved or coma shaped bacillus
- Transmitted in water and less in food
- produces :
  - **Urease & Catalase** enzymes which are toxic to gastric mucosa.
  - **Other Products Increased HCL** secretion
     duodenal peptic ulcer
- Commonest form of chronic gastritis
- Accounts for **90%** of cases of chronic

Urease & Catalase> toxic
Other Products > Inc HCL

https://slideplayer.com/slide/7707731/25/images/43/Helicobacter+pylori+Multiple+flagella+Urease.jpg

H. pylori Chronic Gastritis

Mic :

- H. pylori within gastric pits mucus over epithelial cells.
- **Neutrophils** infiltrate lamina propria & epithelium
- + Plasma cells and lymphocytes
- Lymphoid aggregates +/-germinal centers

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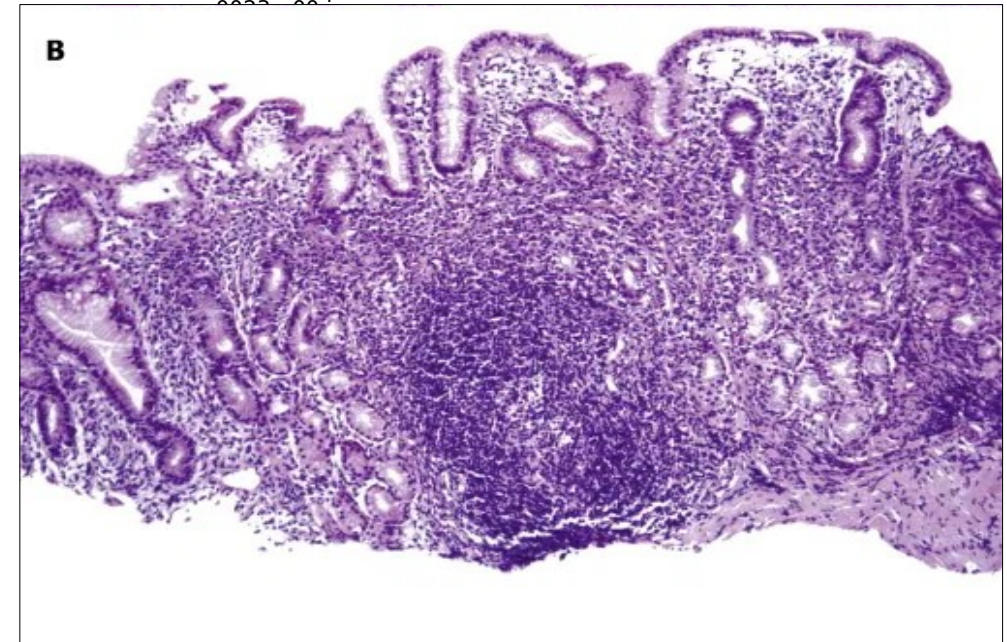
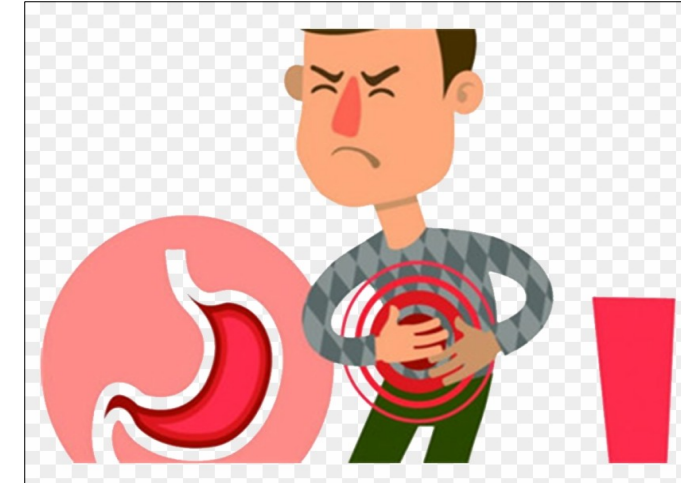

H. pylori Chronic Gastritis

C/P:

Asymptomatic or dyspeptic symptoms

Complications:

- **Peptic ulcer** (gastric or duodenal)
- **Gastric adenocarcinoma**
- ➢ **Mucosa –associated lymphoid tissue (MALT) lymphoma**

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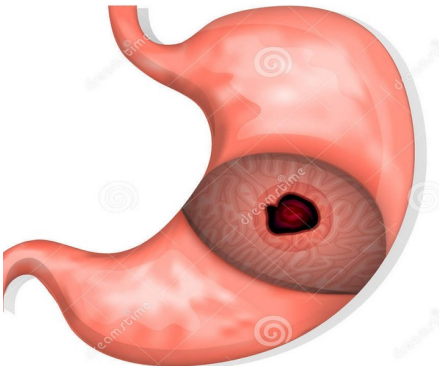
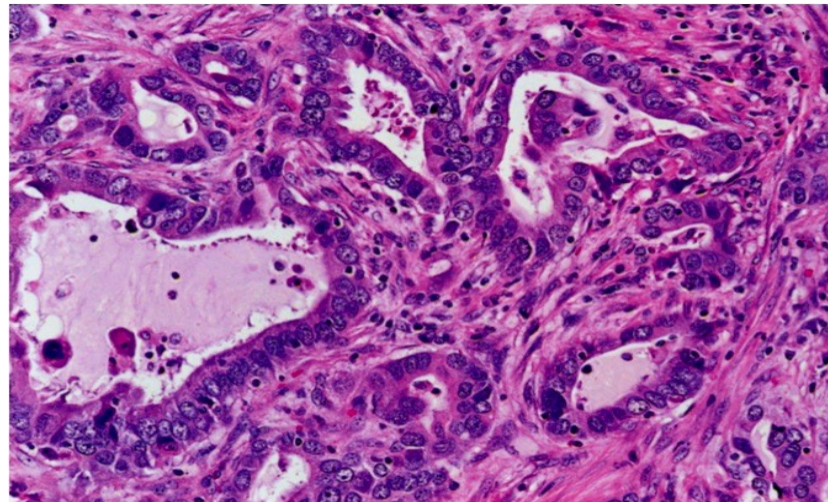
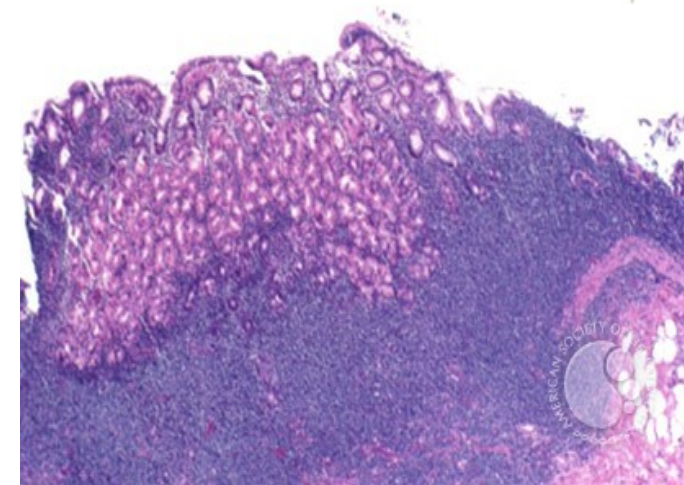
https://thumbs.dreamstime.com/z/stomach-ulcer-illustration-ulcers-57065788.jpg

https://www.eoa-graduateschool.org/cms/wp-content/uploads/

https://imagebank.hematology.org/getimagebyid/2073?size=

2-Autoimmune chronic gastritis

Pathogenesis :

- **Autoantibodies against gastric parietal cells & intrinsic factor leads to:**

➢ **Glands Atrophy → Hypoacidity**

➢ **Pernicious anemia (vit B12 deficiency macrocytic anemia)**

- Mainly in fundus & body of stomach.

- Accounts for 10% of cases of chronic gastritis

Autoantibodies

Parietal cells & Intrinsic factor

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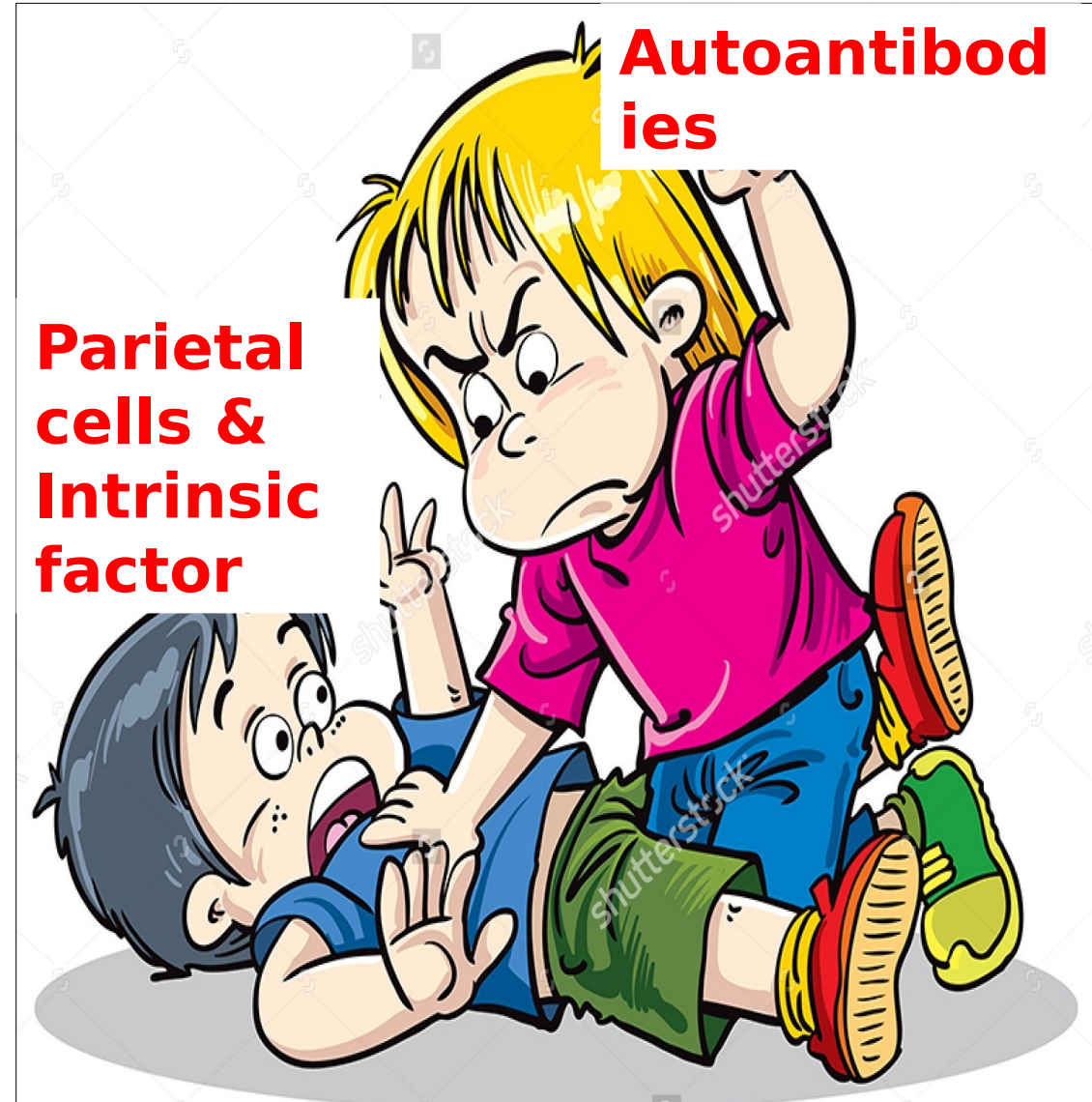

2-Autoimmune chronic gastritis

Feature	H. pylori–Associated	Autoimmune
Location	Antrum	Fundus &Body
Pathogenesis	Urease & catalase & other products	Autoantibodies against parietal cells
Inflammatory infiltrate	Neutrophils plasma cells & Lymphocytes	Lymphocytes, macrophages
Sequelae	• Peptic ulcer • Adenocarcinoma • MALT Lymphoma	• Atrophic gastritis • Pernicious anemia, • Adenocarcinoma
Associations	Low socioeconomic status	Autoimmune disease; thyroiditis, diabetes mellitus

Chronic Gastritis

Mic :

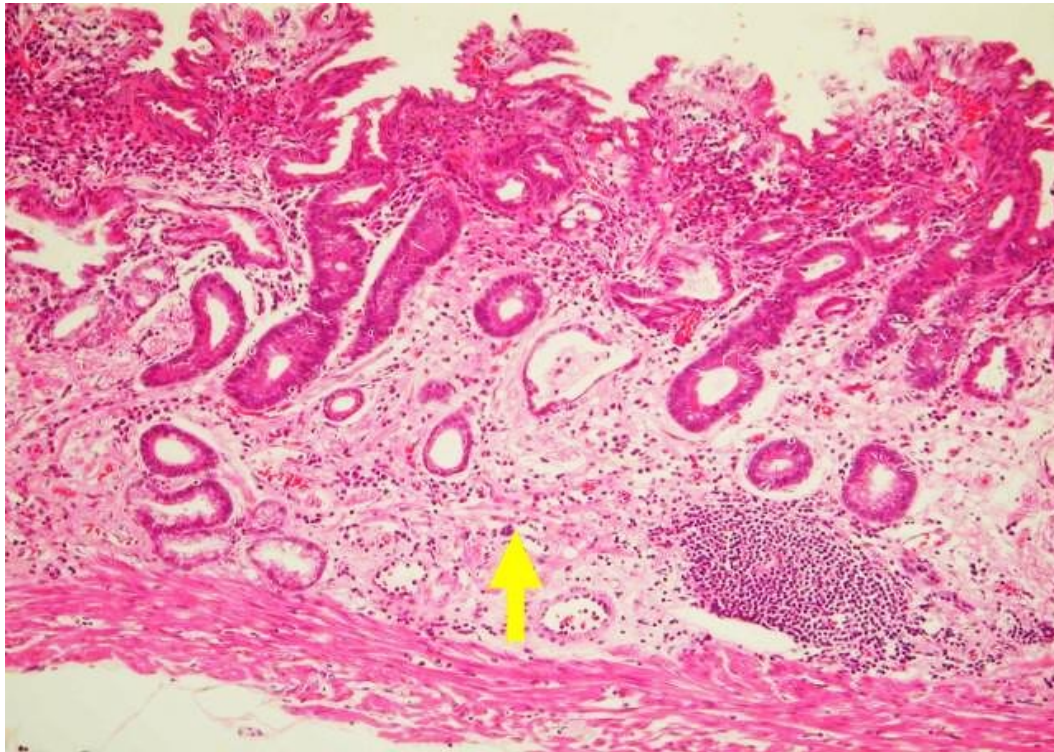
-Lymphocytes & plasma cells)± neutrophils. - **I**nflammatory infiltrate may extend deep **with fibrosis**

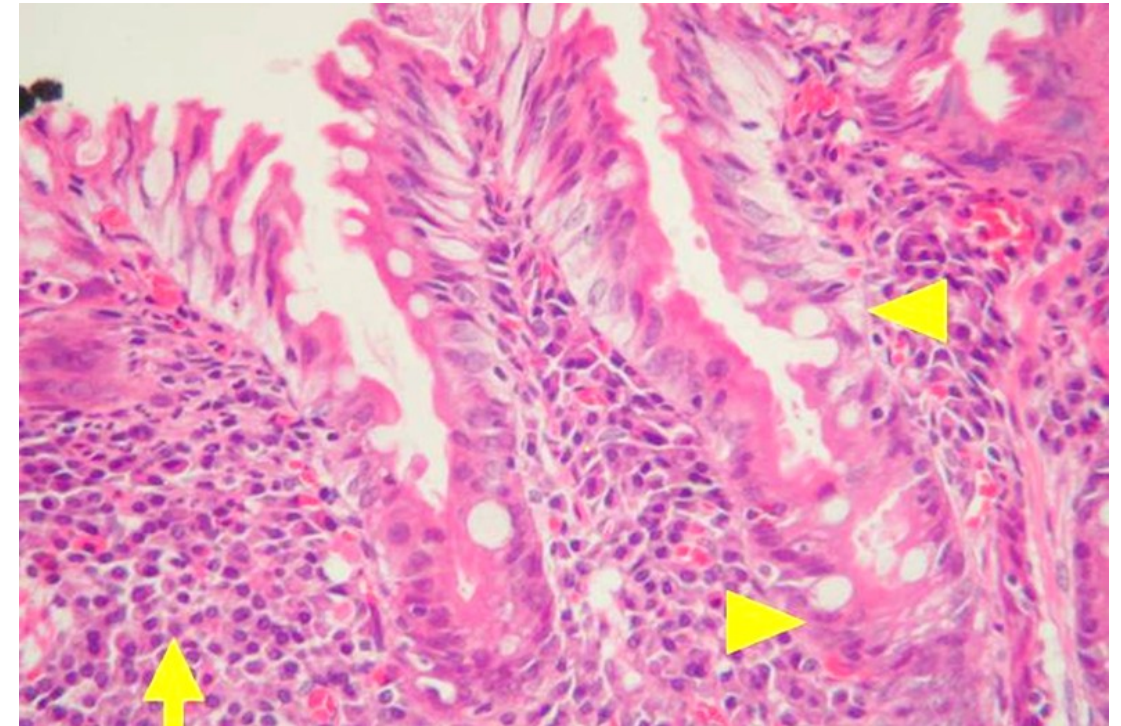
+/-Atrophy **of glandular** mucosa.

+/-Intestinal metaplasia malignancy

https://www.webpathology.com/image.asp?n=6&Case=19

Chronic Gastritis

Mucosal Atrophy

http://dxline.info/img/new_ail/chronic-gastritis_2.jpg

Intestinal metaplasia

http://pathology.tmu.edu.tw/microscopy/images/2033-4.jpg

Chronic gastritis *(Quiz)*

Match

1. **Destruction of parietal cells**
2. **Urease**
3. **MALT Lymphoma**
4. **Pernicious anemia**
5. **Hypoacidity**
6. **Peptic Ulcer**

H.Pylori gastritis

Autoimmune gastritis

Chronic gastritis *(Quiz)*

Match

1. **Destruction of parietal cells**
2. **Urease**
3. **MALT Lymphoma**
4. **Pernicious anemia**
5. **Hypoacidity**
6. **Peptic Ulcer**

H.Pylori gastritis	Autoimmune gastritis
2	1
3	4
6	5
7	7

Ulcers of Stomach & Duodenum

1- Acute gastric Ulcer

2- Chronic peptic ulcers (PUD).

3- Malignant ulcer.

Peptic Ulcer Disease (PUD)

https://i2.wp.com/jeffreysterlingmd.com/wp-content/uploads/2013/08/ulcers.jpg?zoom=2.625&resize=300%2C264

Chronic peptic ulcer:

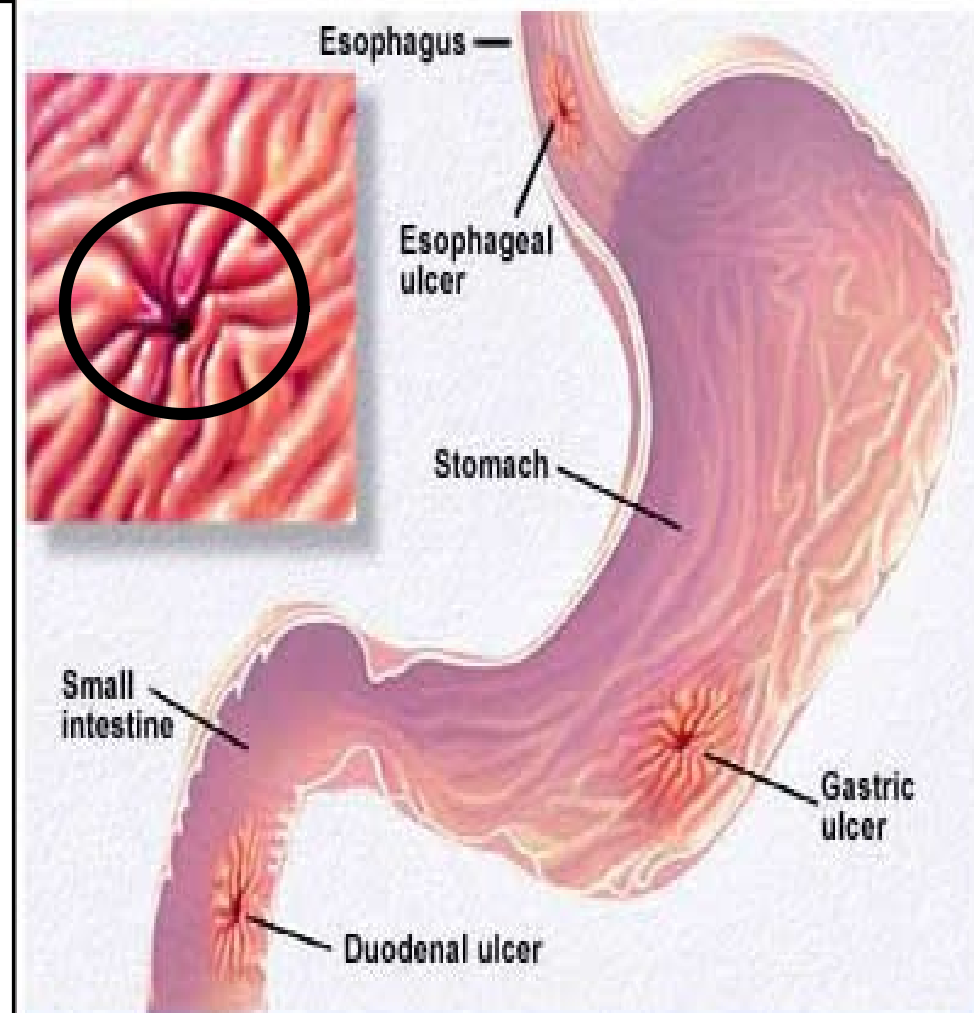
Def:

A defect within mucosa of any portion of gastro-intestinal tract, exposed to acid pepsin secretion.

Incidence

Usually above 20 years- More common in males

Most Common Sites :

- First part of duodenum(80%).
- Stomach(antral).
- Distal Esophagus(GERD).
- Gastrojejunostomy (stomal ulcer).

https://www.healthclop.com/wp-content/uploads/2013/04/gastric_stomach_ulcer_credit_to_MayoClinic.jpg

Pathogenesis of peptic ulcer

Imbalance between

Gastroduodenal mucosal defense Mechanism	Damaging Forces
• Layer of **mucus**	• Gastric acid
• Mucus contains **bicarbonate** neutralizes gastric acid.	• Pepsin
• Epithelial **regenera**	• Impaired regulation of acid secretion
• Mucosal **vascularit**	• Helicobacter pylori
• **Prostaglandins**.	• NSAID's, aspirin
	• Cigarettes & Alcohol

Peptic ulcer:

Gross :

- Single -Rounded.
- Punched out.
- Small (< 2cm) may reach >8cm.
- Clean floor.
- Clear cut edges
- Serosa : thickened + opaque.
- Surrounding Mucosa: flattened.

http://www.stepwards.com/wp-content/uploads/2016/02/path240-1.jpg

Chronic peptic ulcer:

Mic:

- Fibrino necrotic exudate
- Chronic inflammatory cells
- Infected granulation tissue.
- Dense fibrosis or scar interrupting muscle radiating towards serosa.

Fate:

- Healing by epithelial regeneration with underlying fibrosis.

Necrotic debris
Nonspecific acute inflammation
Granulation tissue
Fibrosis

https://qph.fs.quoracdn.net/main-qimg-069d362deb8ef64599ecfa90891d2713.webp

Chronic peptic ulcer:

ULCER EDGE

ULCER BASE

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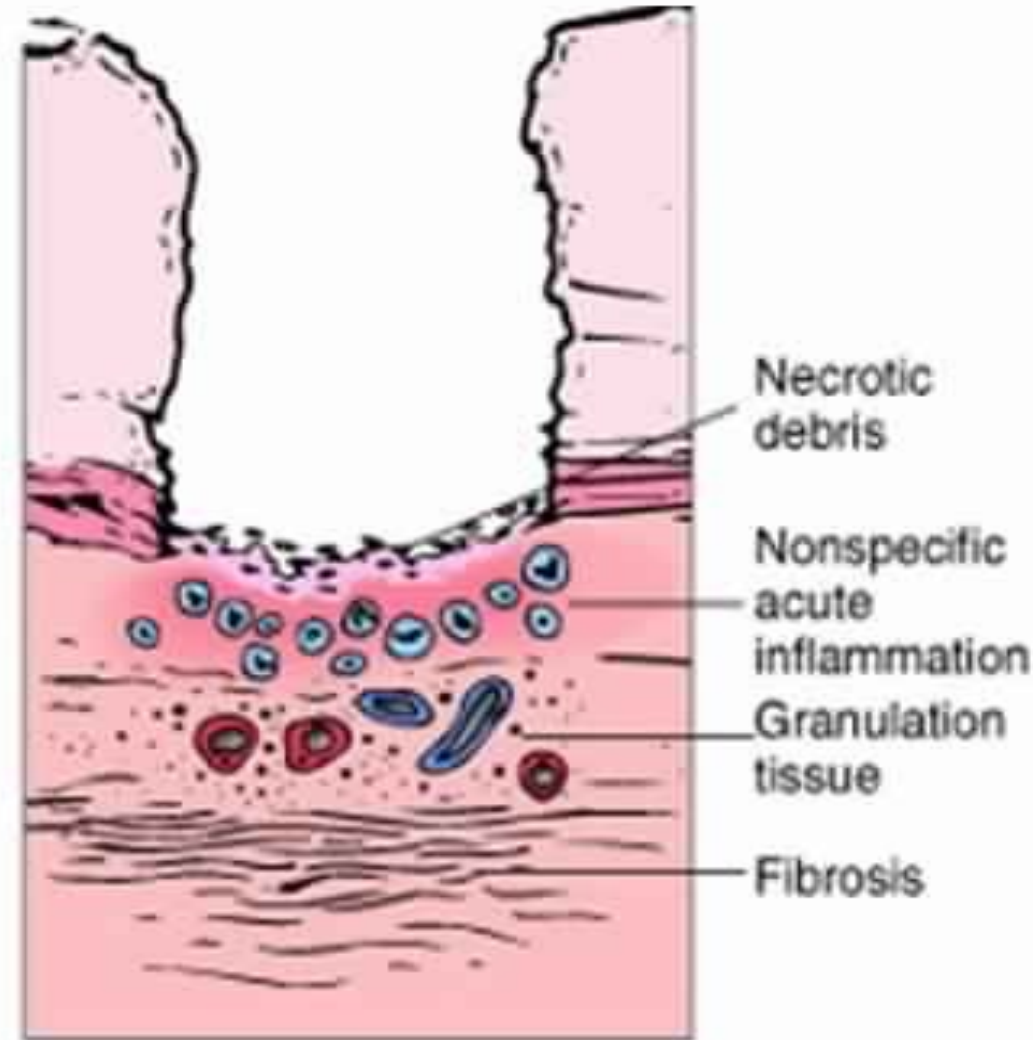
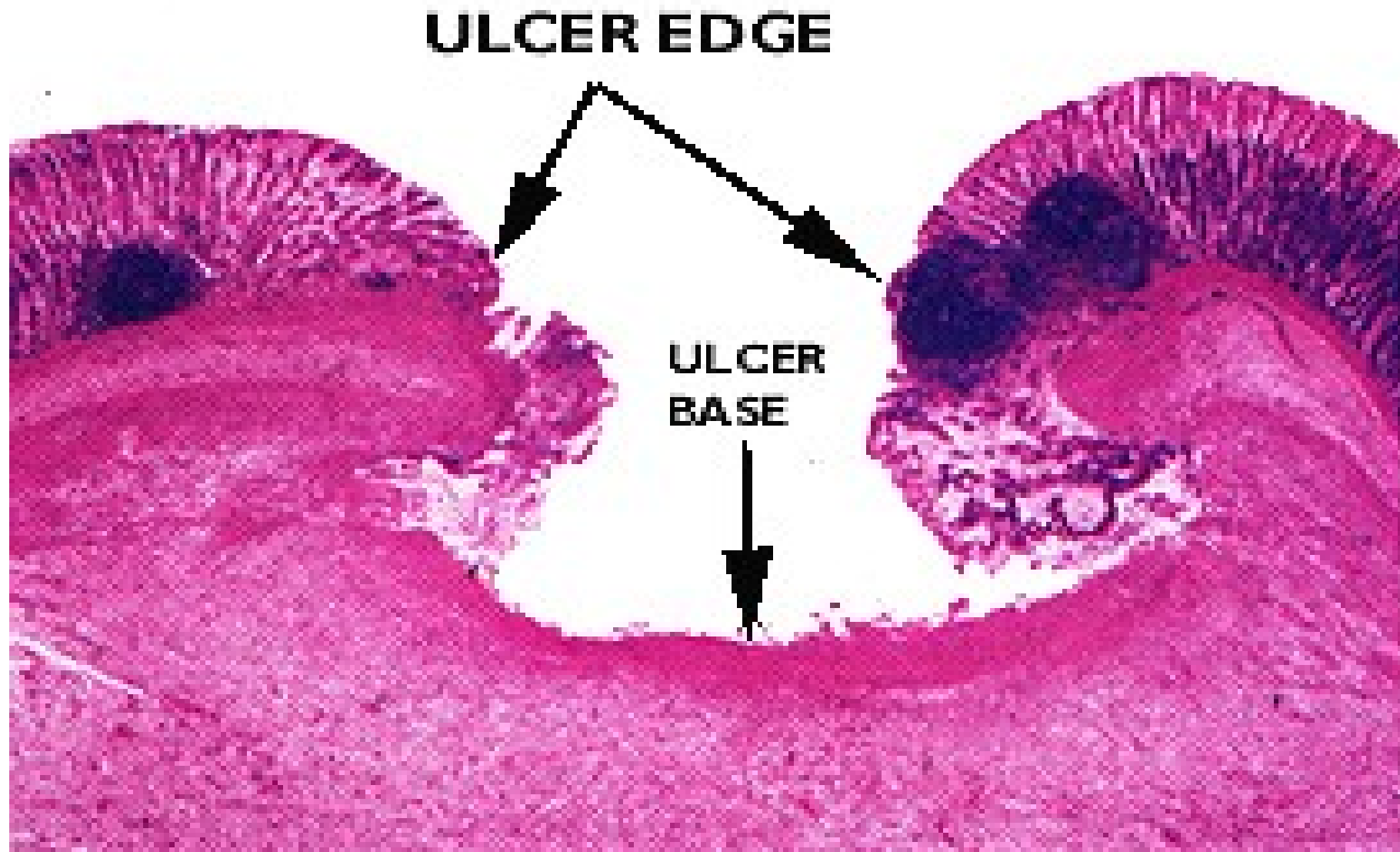

Chronic peptic ulcer:

C/P:

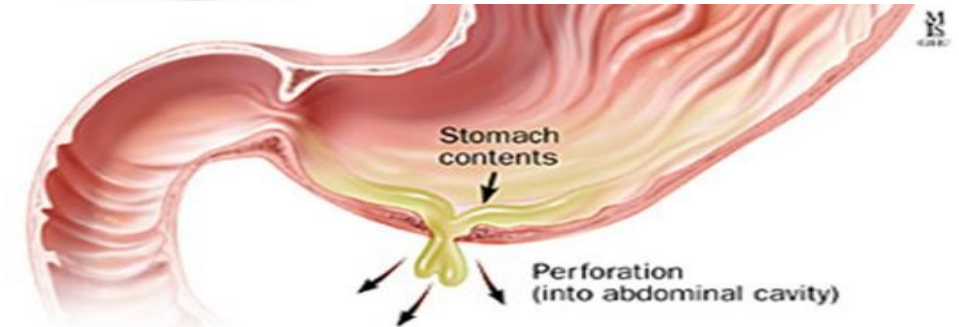
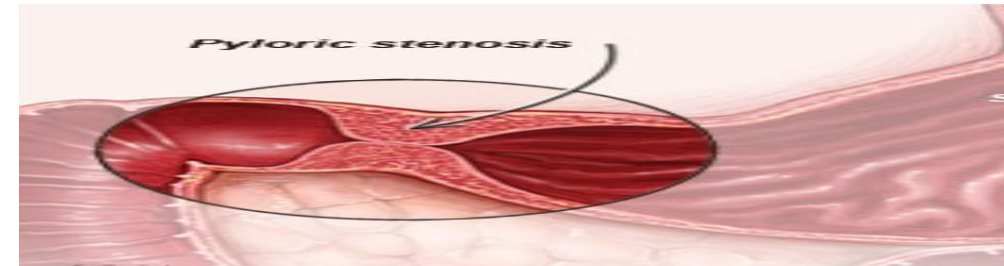
- Epigastric burn or aching pain 1 to 3 hours after meals
- relieved by alkali or food.

Complication:

1- Hematemesis: erosion of thin vessels in ulcer base

2- Cicatrictial contraction leads to :

-Pyloric stenosis -Hour glass stomach

3- Perforation → Peritonitis.

Gastritis and Peptic ulcer *(Quiz)*

Chronic Gastritis is most commonly associated with which of the following ?

a. Helicobacter pylori infection
b. Drug poisoning
c. Trauma
d. Viral infection

Enumerate 2 causes of peptic ulcer

Gastritis and Peptic ulcer *(Quiz)*

Chronic Gastritis is most commonly associated with which of the following ?

a. Helicobacter pylori infection
b. Drug poisoning
c. Trauma
d. Viral infection

Enumerate 2 causes of peptic ulcer

- Decreased mucus layer
- Decrease bicarbonate
- Increased gastric acid or pepsin
- NSAIDs - Hpylori

Keynotes

- Causes of acute gastritis and acute gastric ulceration
- 90% of chronic gastritis are due to H. pylori
- MALT lymphoma may occur on top of H. pylori gastritis
- Pernicious anemia associates autoimmune gastritis
- Peptic ulcer is due to imbalance between mucosal defense mechanisms and damaging forces
- Complications of peptic ulcer

Thank
You

Suggested Textbooks

- Kumar V, Abbas A, Aster J : In Robbins and Cotran pathologic basis of disease, 10th edition. Elsevier Saunders. Chapter 16
- http://library.med.utah.edu/WebPath/GIHTML/GI020.html
- http://www.pathologyoutlines.com/stomach.html